

# Numerical Analysis Questions & Answers

## Question by Student 201327116

*Professor, Assignment #3 Q#1 (b) In C, We can solve by using the upper triangular. In Compile, The denominator is zero when there is the problem What ever it is that you can use when the denominator is zero?*

Are you getting the same problem when solving it by hand? If not, then it means there is a bug in your C code. If yes, then outline the problem in another question below.

## Question by Student 201327107

*Professor, I learned partial pivoting in order to prevent possible division by 0. As a result, for 4 rows and one column of A matrix is 0 in Assignment3 Q1, then should I have to use partial pivoting in C code and by hand?*

No, you shouldn't be using pivoting here because the question asks to use Gaussian elimination. Double check your solution: if you think there is a mistake in the question formulation then outline your full solution below in L<sup>A</sup>T<sub>E</sub>X until the problem occurs and I will check it.

## Question by Student 201327107

*In Assignment3 Question1 (b)*

*intmain()*

*{*

*for(row = 0; row < N; row++)*

*{*

*for(row2 = row + 1; row2 < N; row2++)*

*{*

*assert(A[row2][row] != 0.0);*

*fact = -A[row][row]/A[row2][row];*

*In code when row = 0, row2 = 3, then A[row2][row] is zero. So compile is stop. I think row4, col1 of matrix A that should not be the zero.*

No, I asked that you post the solution by hand and show at which step there is a problem (using L<sup>A</sup>T<sub>E</sub>X).

### Question by Student 201327102

*Professor, when you taught me about finding convergence of each method, you put  $g(y) = \frac{1}{1+y}$  and expand  $g(y)$  with TAYLOR SERIES at  $y = 0$  so you wrote*

$$g(y) = g(0) + (y - 0)g'(y) + \frac{y^2}{2}g''(y) + \dots$$

*But according to the original form of TAYLOR SERIES is*

$$g(y) = g(0) + (y - 0)g'(0) + \frac{y^2}{2}g''(0) + \dots$$

*Isn't there any wrong in your notation?*

Yes, you are right, it should be:

$$g(y) = g(0) + (y - 0)g'(0) + \frac{y^2}{2}g''(0) + \dots$$

If I wrote otherwise on the board, then this is a mistake obviously so please change your notes in consequence. This is a good observation, I'll give you 2 points bonus boost.

### Question by Student 201527110

*Professor, I wonder 'curve fitting and interpolation' assignment is due to 'thursday' or 15th. In the assignment page, you announced like Thursday 15th Nov. But 15th is tuesday as you know.*

Oops, it's due on Thursday November 17th. Thanks for correcting this. I'll give you 2 points bonus boost.

### Question by Student 201527110

*Professor, I have a question during studying Cubic Spline boundary conditions. For define  $f'_i(x) = \alpha_L$  and  $f'_i(x_{i+1}) = \alpha_R$ ,  $\alpha_L$  and  $\alpha_R$  in here, are user-specified constant. Is that means it could be any arbitrary number? Or do I have to define exact real numbers for that?*

Well, user-specified constants are numbers that are specified by you, the user of the code. Of course, such could be any real number you wish to specify..